



US Army Corps
of Engineers
Alaska District

Public Notice of Application for Permit

Regulatory Branch (1145b)
3437 Airport Way
Suite 206
Fairbanks, Alaska 99709-4777

PUBLIC NOTICE DATE: June 2, 2006
EXPIRATION DATE: July 3, 2006
REFERENCE NUMBER: POA-1992-574-S
WATERWAY NUMBER: Fish Creek

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States as described below and shown on the attached plan.

APPLICANT: Fairbanks Gold Mining, Inc. (FGMI), Post Office Box 73726, Fairbanks, Alaska 99707-3726

AGENT: Delbert Parr, Environmental Manager, FGMI, Post Office Box 73726, Fairbanks, Alaska 99707-3726, (907) 490-2207

LOCATION: 65.0000°N, -147.3271°W. FGMI's Fort Knox Millsite Lease (ADL 414960 and ADL 414961), located in T. 2 N., R. 2 E., Fairbanks Meridian, approximately 26 miles northeast of Fairbanks, Alaska. The current project would be located in sections 4, 8, and 9.

WORK: The applicant proposes to construct, operate, and then close a heap leach facility. Work would be performed according to the attached plans (sheets 1-22, dated May 31, 2006).

PURPOSE: The commercial extraction of precious metals (gold).

ADDITIONAL INFORMATION: The attached narrative and figures describe the construction and operation aspects of the proposed project. Included in the narrative is an overview of the heap leach facility closure, reclamation, and monitoring plan. A detailed reclamation and closure plan for the heap leach facility and the entire Fort Knox mine site has been drafted by FGMI and is undergoing agency review. The Corps will submit water quality, reclamation, and closure concerns for public review in a separate Public Notice issued jointly with the State of Alaska.

WATER QUALITY CERTIFICATION: A permit for the described work will not be issued until a certification or waiver of certification, as required under Section 401 of the Clean Water Act (Public Law 95-217), has been received from the Alaska Department of Environmental Conservation.

PUBLIC HEARING: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this

application. Requests for public hearings shall state, with particularity, reasons for holding a public hearing.

CULTURAL RESOURCES: A comprehensive cultural resource program for the entire Fort Knox Millsite Lease, including the area of the proposed heap leach facility, was conducted in four phases between 1990 and 1993. Field inventories and evaluations were conducted in 1992, and additional site specific investigations were conducted in 1993. According to FGMI's "Fort Knox Mine Environmental Assessment" (August 1993), 98 cultural and historic resources were identified within the lease area, including numerous paleontological remains, seven prehistoric sites, and many sites related to early mining activities within the project area (page 3-126). SHPO determined 26 sites were eligible for inclusion in the National Register of Historic Places and that 11 of these eligible sites required additional evaluations by the project Memorandum of Agreement (MOA) among the Corps, SHPO, FGMI, the Advisory Council on Historic Properties (ACHP), and the Fairbanks Historical Commission. The MOA was signed in October 1993, and the "Fort Knox Project Cultural Resources Program Mitigation Report" was completed in August 1994. The current application is being coordinated with SHPO. Any comments SHPO may have concerning presently unknown archeological or historic data that may be lost or destroyed by work under the requested permit will be considered in our final assessment of the described work.

ENDANGERED SPECIES: No threatened or endangered species are known to use the project area. Preliminarily, the described activity will not affect threatened or endangered species, or their critical habitat designated as endangered or threatened, under the Endangered Species Act of 1973 (87 Stat. 844). This application is being coordinated with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Any comments they may have concerning endangered or threatened wildlife or plants or their critical habitat will be considered in our final assessment of the described work.

ESSENTIAL FISH HABITAT: The proposed work is being evaluated for possible effects to Essential Fish Habitat (EFH) pursuant to the Magnuson Stevens Fishery Conservation and Management Act of 1996 (MSFCMA), 16 U.S.C. et seq and associated federal regulations found at 50 CFR 600 Subpart K. The Alaska District includes areas of EFH as Fishery Management Plans. We have reviewed the January 20, 1999, North Pacific Fishery Management Council's Environmental Assessment to locate EFH area as identified by the National Marine Fisheries Service (NMFS). We have determined that the described activity within the proposed area will not adversely affect EFH, including anadromous fish and federally managed fishery resources.

SPECIAL AREA DESIGNATION: None.

EVALUATION: The decision whether to issue a permit will be based on an evaluation of the probable impacts including cumulative impacts of the proposed activity and its intended use on the public interest. Evaluation of the probable impacts, which the proposed activity may have on the public interest, requires a careful weighing of all the factors that become relevant in each particular case. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur, are therefore determined by the outcome of the general balancing process. That decision should reflect the national concern for both protection and utilization of important resources. All factors, which may be relevant to the proposal, must be considered including the cumulative effects thereof. Among those are conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and, in general,

the needs and welfare of the people. For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) guidelines. Subject to the preceding sentence and any other applicable guidelines or criteria (see Sections 320.2 and 320.3), a permit will be granted unless the District Engineer determines that it would be contrary to the public interest.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Comments on the described work, with the reference number, should reach this office no later than the expiration date of this Public Notice to become part of the record and be considered in the decision. Please contact Sharon Seim by email at Sharon.G.Seim@poa02.usace.army.mil, by phone at (907) 474-2166, or by FAX at (907) 474-2164 if further information is desired concerning this notice.

AUTHORITY: This permit will be issued or denied under the following authority:

(X) Discharge dredged or fill material into waters of the United States - Section 404 Clean Water Act (33 U.S.C. 1344). Therefore, our public interest review will consider the guidelines set forth under Section 404(b) of the Clean Water Act (40 CFR 230).

A plan and Notice of Application for State Water Quality Certification are attached to this Public Notice.

District Engineer
U.S. Army, Corps of Engineers

Attachments

FRANK H. MURKOWSKI, GOVERNOR

STATE OF ALASKA

OFFICE OF THE GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF WATER

Non-Point Source Water Pollution Control Program
401 Certification Program

NOTICE OF APPLICATION FOR STATE WATER QUALITY CERTIFICATION

Any applicant for a federal license or permit to conduct an activity that might result in a discharge into navigable waters, in accordance with Section 401 of the Clean Water Act of 1977 (PL95-217), also must apply for and obtain certification from the Alaska Department of Environmental Conservation that the discharge will comply with the Clean Water Act, the Alaska Water Quality Standards, and other applicable State laws. By agreement between the U.S. Army Corps of Engineers and the Department of Environmental Conservation, application for a Department of the Army permit to discharge dredged or fill material into navigable waters under Section 404 of the Clean Water Act also may serve as application for State Water Quality Certification.

Notice is hereby given that the application for a Department of the Army Permit described in the Corps of Engineers' Public Notice No. POA 992 574 S, Fish Creek serves as application for a short-term variance of State Water Quality Certification from the Department of Environmental Conservation, as provided in Section 401 of the Clean Water Act of 1977 (PL 95-217).

The Department will review the proposed activity to ensure that, except for an allowed, short-term variance, any discharge to waters of the United States resulting from the referenced project will comply with the Clean Water Act of 1977 (PL95-217), the Alaska Water Quality Standards, and other applicable State laws. The Department also may deny or waive certification.

Any person desiring to comment on the project with respect to Water Quality Certification may submit written comments within 30 days of the date of the Corps of Engineer's Public Notice to:

Department of Environmental Conservation
WQM/401 Certification
555 Cordova Street
Anchorage, Alaska 99501-2617
Telephone: (907) 269-7564
FAX: (907) 269-7508

FORT KNOX MINE

WALTER CREEK HEAP LEACH PROJECT

Fairbanks Gold Mining, Inc. (FGMI), a wholly owned subsidiary of Kinross Gold Corporation (KGC), proposes to construct, operate and close the Walter Creek Heap Leach facility. The Walter Creek Heap Leach Project is located approximately 26 miles northeast of Fairbanks, Alaska at Fort Knox Mine (Figure 1). The facility is located on the Livengood U.S. Geological Survey (USGS) quadrangle map in Township 2N, Range 2E of the Fairbanks Meridian. The approximate GPS coordinates of the facility center are latitude 65° 0.76N, longitude 147° 20.92W. The heap leach project will be a component of the Fort Knox Mine operations, and it is located on FGMI's Millsite Lease (ADL 414960 & ADL 414961). Figure 2 illustrates the Millsite Lease and the location of the heap leach facility within that lease.

FGMI is requesting modification of Department of Army permit number POA-1992-574 to incorporate the Walter Creek Heap Leach Project. The valley fill heap leach pad covering approximately 310 acres is designed to contain 161 million tons of ore from the Fort Knox pit. The construction of the heap leach pad will require placement of fill in 54.7 acres of wetlands. The fill will be comprised of a synthetic liner (80-mil HDPE) underlain by 12 inches of engineered sub-base with a maximum permeability of 1×10^{-5} cm/sec. Approximately 88,250 cubic yards of fill material will be placed in wetlands.

Three additional areas totaling 2.9 acres of wetlands (Figure 3) will be impacted by placement of fill for road construction. The three areas will be impacted by haul road construction with the pipelines for barren and pregnant solution being located in the fill of the most southeastern wetland. The volume and dimensions of the fill to be placed in these wetlands are indicated on Figure 3.

GENERAL SITE CONDITIONS

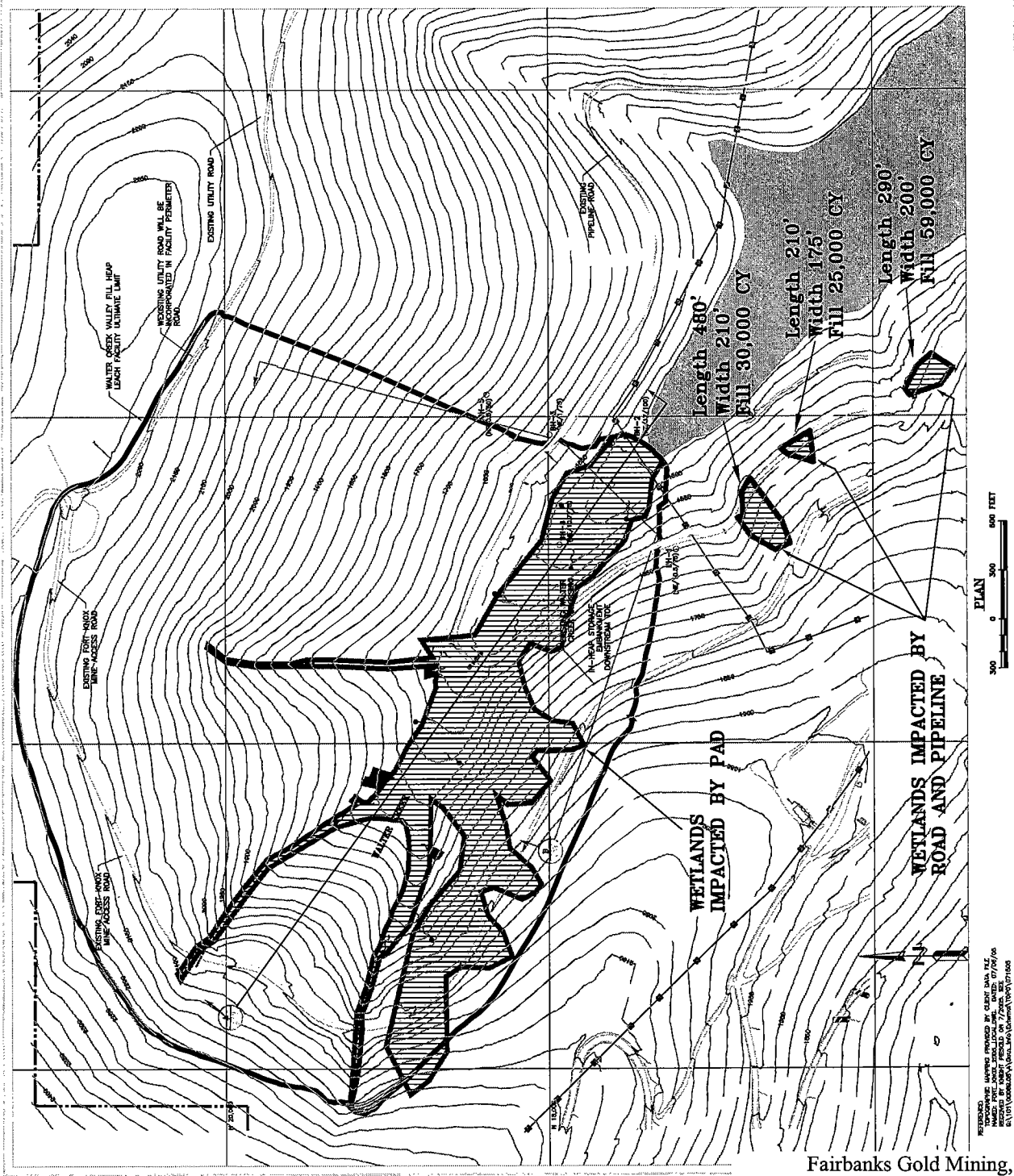
Environmental baseline studies for the Walter Creek area were completed in 1992 and 1993 during the initial permitting of the Fort Knox Mine including surface and groundwater hydrology, geochemistry, socio-economic (including noise and visual) impacts and a jurisdictional wetland survey. A cultural resource survey was completed in 1992 with more site specific investigations in 1993.

The heap leach project is located in the Walter Creek sub-basin, a tributary to the Fish Creek drainage. The leach pad will be located near the upper end of the Walter Creek drainage. The upper end of the drainage is bowl-shaped with the main drainage oriented in an east-west direction joined by two sub-drainages feeding in from the north side. The width of the Walter Creek valley bottom varies from 150 to 300 feet wide in its lower reaches. The valley bottom is heavily vegetated with marshland vegetation and is wet. The valley side slopes are, on average, 2.5:1 to 3:1 although locally they can be steeper. Maximum relief across the project area in the Walter Creek valley is on the order of 900 to 1,000 feet. This valley has not been disturbed by placer mining as have a number of other valleys in the area.



Fort Knox Mine General Arrangement

SIZE	DRAWING NAME	Figure 2	REV
SCALE: NTS		DATE: 11/2005	SHEET 1 OF 1



- LEGEND:**
- EXISTING GROUND SURFACE CONTOUR AND EL. FEET
 - PROPERTY BOUNDARY
 - EXISTING PIPELINE
 - EXISTING DRAINAGE/DIVERSION
 - EXISTING POWER LINE
 - EXISTING ROAD
 - EXISTING CULVERT
 - EXISTING SPRING
 - Tailing Permit Boundary
 - Heap Leach Boundary
 - Wetlands Boundary
 - 1992 Jurisdictional Wetlands

- EXISTING SITE ACCESS ROAD FILL
- Jurisdictional Wetlands
- TAILING (CONFORMATION AS OF 4/30/2006)

NOTES:

- SUMMARY LOSS OF THE TEST HOLES AND TEST PITS ARE INCLUDED IN THE WETLANDS CREEK VALLEY FILL HEAP LEACH PROJECT AREA.
- TEST PITS 1-11, THROUGH BULK, DRILLED FOR SOIL SAMPLING, LOCATED THE LOCATIONS OF BULK-TEST THROUGH BULK-TEST, DRILLED FOR ROCK, RESPECTIVELY.
- TEST PITS 1-11, 10, 11, AND 15 WERE NOT COMPLETED DUE TO INACCESSIBILITY CAUSED BY DENSE FORESTED AREAL.

FORT KNOX			
Jurisdictional Wetlands			
SCALE 1" = 1000'		DATE 5/2006	REV
Figure 3			SHEET 1 OF 1

Most undisturbed ground within the project area is forested. Well drained soils of the uplands and alluvial plains are vegetated mainly with white spruce, paper birch and quaking aspen. Moderately well drained soils support vegetation similar to that found on well drained soils; however, black spruce and willows are commonly found. Mosses, horsetail, and grasses usually cover the ground in these areas. Poorly drained soils are usually underlain by shallow permafrost and support communities of black spruce, willow, and alder. Ground cover consists of moss, lichens, Labrador tea, cranberry, blueberry, and shrubs of bog birch and tussocks of cotton grass.

The Walter Creek drainage and the heap leach project are located immediately upstream of the tailings impoundment, and Walter Creek currently flows to the existing tailings impoundment. Walter Creek flows year round in the main drainage. A number of springs, seeps, and wet areas support the stream flow that occurs in the leach pad footprint. Stream flows and surface water above the active area of the leach pad will be transported around the pad in diversion ditches to the tailing impoundment. For seeps, springs and wet areas occurring within the lined area of the pad, a series of underdrains will be installed to collect these flows and transport the flows to the tailing impoundment.

The planned heap leach pad is underlain by a quartz muscovite schist. Quaternary unconsolidated valley-fill deposits are found along the valley bottoms. These consist of silty gravels with sand and sandy silts with gravel. Bedrock on the valley side slopes is covered with generally 5 to 15 feet of dense silty sands and gravels; however, locally these may be up to 30 feet thick. A series of parallel northeast-to-southwest-trending faults traverse the areas adjacent to the project site. No faults have been mapped on the leach pad site, and exploratory drilling at the site of the leach pad did not reveal any evidence of faulting at the site. Numerous relatively thin shear zones are present, and they appear to follow foliation or joints or both. Drill results also indicate dominant joint orientations of from 40 to 60 degrees to the core axis. This indicates that the bedrock should provide a stable foundation for the leach pad since the high angle joints do not "daylight" to provide a zone of weakness along which failure could occur.

The two principal hydrostratigraphic units in the area of the proposed heap leach facility are the alluvium that occurs within the Walter Creek drainage and the fractured bedrock. The alluvium in Walter Creek typically consists of a thin layer of organic soils, moss and vegetation, underlain by organic silts with occasional channel deposits of sand and gravel. The alluvium overlies an erosional surface of the weathered bedrock. The depth to groundwater in the alluvium ranges from 0 to 10 ft below ground surface. The permeability of the basal gravel ranges between 10^{-4} to 10^{-5} cm/sec. Hydraulic conductivity values for the alluvial material are estimated to range between 10^{-2} to 10^{-5} cm/sec with an average of 7×10^{-3} cm/sec.

The underlying bedrock aquifer consists primarily of schist (referred to as the Fairbanks schist) and is interpreted to be a pre-Cambrian Age. This schist is host to younger granitic intrusions, such as the one outcropping at the Fort Knox mine site. The upper portion of the bedrock (ranging up to 100 ft in thickness) is highly weathered. The degree of weathering depends on the original lithologic content of the bedrock and exposure. Weathering characteristics consist of intense fracturing, alteration of primary minerals to clays and oxides (such as iron oxide), dislocation from soil creep and the filling of fractures with sand, silt, and clay. Movement of groundwater in the bedrock aquifer occurs in open fractures. The degree of fracturing is variable,

as indicated by the range of hydraulic conductivities ranging from 10^{-2} to 10^{-5} cm/sec. Depth to water in the bedrock ranges from 2 to 30 ft below ground surface.

Facilities located down-gradient of the proposed heap leach pad include the tailing impoundment, the seepage collection system, and the freshwater reservoir. Of these, the tailing impoundment and seepage collection system are the most significant because they will provide contingency containment during operation and will be an integral part of the site-wide closure plan that includes the heap leach pad.

The tailing impoundment has been designed as a zoned earthfill/rockfill structure capable of withstanding full hydrostatic load. Slurried tailings are currently discharged sub-aerially from pipes located at the upstream margin of the tailing facility. Approximately 40,000 to 45,000 tons per day are processed and deposited in the tailing impoundment. To date, approximately 123 million tons of tailings have been placed in the facility. The decant pool covers an area of approximately 175 acres and serves as the source of makeup water to the mill and will be the source of makeup water for the heap leach operation.

Seepage from the tailing impoundment is collected in a seepage collection sump located at the downgradient toe of the tailings embankment. The sump is connected to the foundation drain in the dam. In addition, there are six interceptor wells that collect any bypass flow from the sump. Pumping from these wells has created a cone of depression that provides hydraulic containment. Solutions collected in the sump and by the interceptor wells are returned to the tailing impoundment.

Below the tailing impoundment within the Fish Creek drainage are the constructed wetlands developed by FGMI in areas of old placer mining. The wetlands and discharge to the freshwater reservoir constructed by FGMI to provide makeup water for processing ore. In addition to the Fish Creek drainage, Solo Creek and Last Chance Creek discharge to the freshwater reservoir which discharges through a spillway to Fish Creek.

Limited amounts of permafrost have been identified at the toe of the south slope. Where encountered and judged to be a problem, the permafrost will be removed to bedrock. The limited amount of permafrost is not expected to cause freezing of the solutions in the heap. In general, permafrost forms as a result of cold air temperatures freezing the soils and rock from the surface down. Covering the permafrost with the leach pad will cause it to melt since the supply of cold air that is needed to maintain permafrost is removed and replaced by the relatively warm ore and solution in the leach pad. Thus, any permafrost that could melt and provide unsuitable support for the pad and its related facilities will be removed.

In 1992, a jurisdictional wetland survey was completed for the Fort Knox Project. Additional acreage has been identified based on current conditions and current regulations. Figure 3 illustrates the planned heap leach pad and the 54.7 acres of jurisdictional wetlands that will be impacted by the pad. An additional 2.91 acres of jurisdictional wetlands identified on Figure 3 will be disturbed by roads and pipelines to be constructed in conjunction with the heap leach pad.

HEAP LEACH DESIGN AND OPERATION

The heap leach pad will be constructed in five stages with the first two stages constructed initially. The pad will be loaded with run-of-mine ore from the Fort Knox pit and lower grade stockpiles. Ore will be loaded on the pad in 40 foot lifts at a rate of 40,000 tons per day. The valley fill heap leach pad will be constructed with a 12-inch prepared subbase with a permeability of less than 1×10^{-5} cm/sec overlain by a synthetic liner which will be 80 mil HDPE or a similar material. Above the synthetic liner, there will be an overliner constructed consisting of three feet of crushed rock predominantly less than one-inch in size containing a network of piping to promote rapid drainage. The overliner will provide liner protection during ore loading, promote leachate collection and maintain a low head on the synthetic liner.

The heap leach facility will utilize an in-heap storage pond for collection of pregnant solution. In addition to providing the necessary operating capacity for pregnant solution, the in-heap storage pond will be sized to contain: (1) solution from a 24-hour drain down, plus (2) the runoff from the 100-year/24-hour storm event.

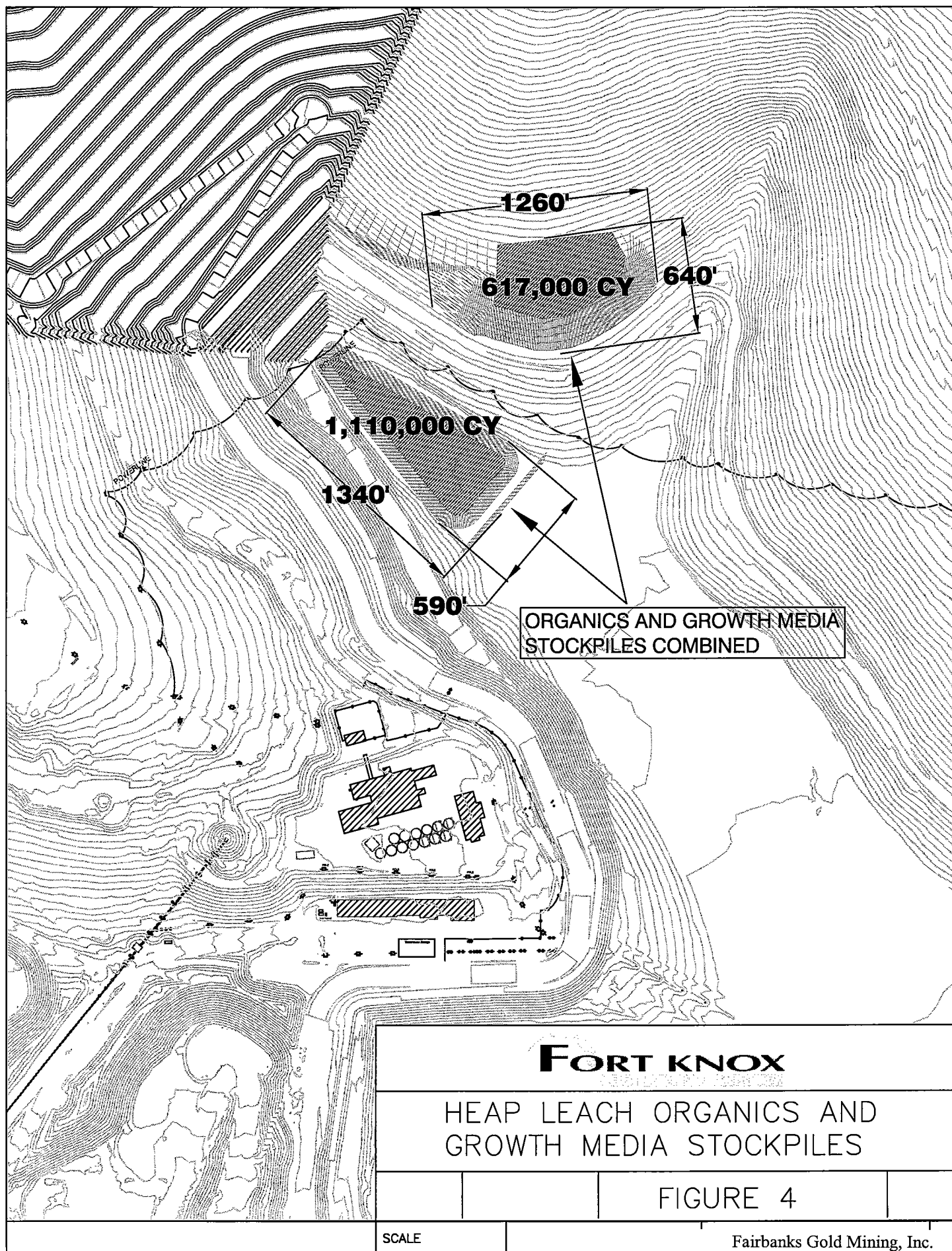
Beneath the in-heap storage pond, a Leachate Collection and Recovery System (LCRS) will be constructed above the subbase. The LCRS consists of two synthetic liners with a pump back system to return any solution passing through the primary liner to the in-heap storage pond. A Process Component Monitoring System (PCMS) that consists of a network of drains located in areas of high solution flow will be utilized for leak detection. An underdrain system designed to capture and transport flow from seeps and springs under the pad will provide additional leak detection.

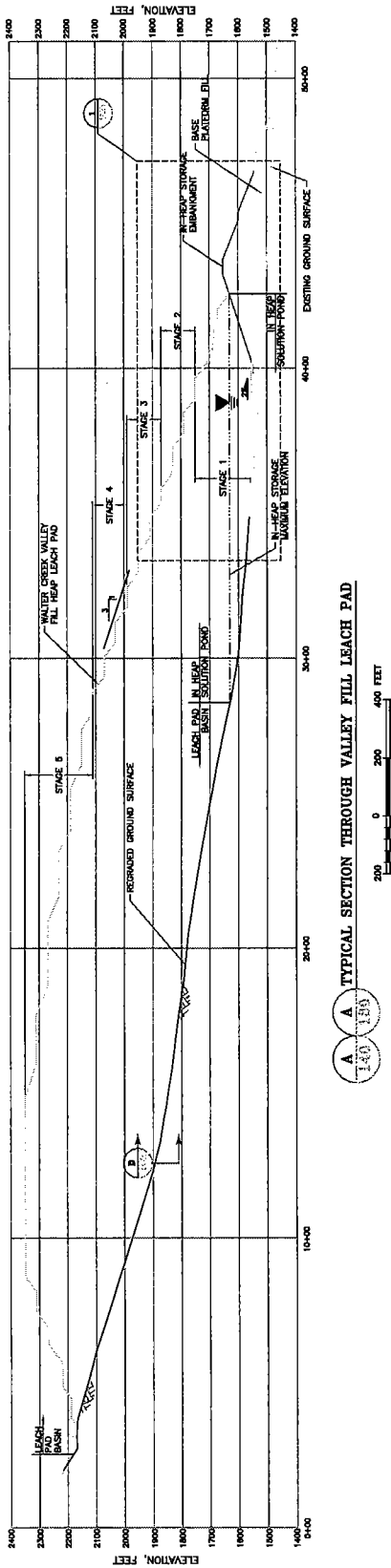
Solution will be removed from the heap with a series of three pregnant solution collection wells located at the lowest portion of the in-heap storage basin. The pumping rate will approximate the solution application rate of 8,000 gallons per minute (gpm). Each of the pumps will have a capacity of 4,000 gpm. Typically, two pumps will be in operation with the third pump on standby. Pregnant solution will be pumped directly to a new carbon-in-columns (CIC) located adjacent to the existing mill.

The CIC plant consists of a train of carbon columns that adsorb the gold and silver on to carbon. The barren solution from the CIC plant will be returned to the pad. The application of barren solution will likely utilize a network of solution emitters. All solution will be moved to and from the pad in pipes.

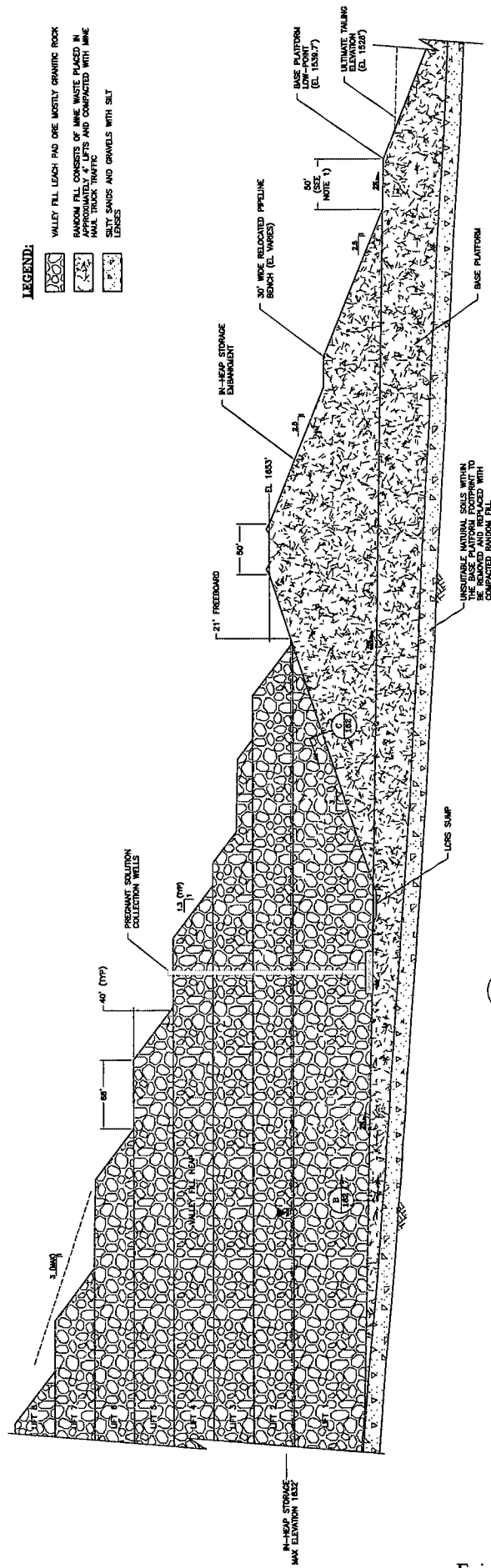
Construction of the heap leach facility will begin with removal of vegetation and soil material from the 310 acres planned for pad development. Soil material removed from the surface of the basin will be stockpiled in the areas illustrated on Figure 4. A sufficient amount of growth media will be stockpiled to allow replacement of a minimum of one foot of growth media on the heap leach pad disturbance at closure.

A base platform fill will be constructed to provide a base for the in-heap storage embankment. It is located to maximize the size of the heap leach pad in Walter Creek and avoid the need to remove or construct on the existing tailing at the upper end of the Walter Creek drainage. The





A A TYPICAL SECTION THROUGH VALLEY FILL LEACH PAD



NOTE:

1. THE UNDERMIN COLLECTION SUMP AND POND SUMP WILL BE LOCATED DOWNSTREAM OF THE N-HEAP STORAGE EMBANKMENT.

1 TYPICAL IN-HEAP STORAGE EMBANKMENT AND BASE PLATFORM

- LEGEND:**
- VALLEY FILL LEACH PAD ONE MOSTLY GRANITIC ROCK
 - RANDOM FILL CONSISTS OF WASTE PLACED IN APPROXIMATELY 4' LIFTS AND COMPACTED WITH WHE HAIL TRUCK TRAFFIC
 - SILTY SANDS AND GRAVELS WITH SILT LENSES

FORT KNOX			
BASE PLATFORM AND HEAP STORAGE EMBANKMENT			
SIZE	FORM NO.	DWG NO.	FIGURE 5
SCALE			REV
			DW101-89-08-180

NOTES: 1. THE UNDERMIN COLLECTION SUMP AND POND SUMP WILL BE LOCATED DOWNSTREAM OF THE N-HEAP STORAGE EMBANKMENT. 2. THE UNDERMIN COLLECTION SUMP AND POND SUMP WILL BE LOCATED DOWNSTREAM OF THE N-HEAP STORAGE EMBANKMENT. 3. THE UNDERMIN COLLECTION SUMP AND POND SUMP WILL BE LOCATED DOWNSTREAM OF THE N-HEAP STORAGE EMBANKMENT.

base platform will be approximately 50 feet high as measured from the existing ground level (Figure 5). It will be founded on rock approximately 15 feet below the existing ground surface. The base platform is designed so that the top of the platform will remain above the level of the tailing. The base platform will be constructed of mine waste rock comparable to the random fill used in construction of the tailing embankment.

The heap leach facility is designed with in-heap storage of process solution and storm water which eliminates any surface exposure of process solution. Random fill composed of mine waste rock will be used to construct the embankment. The in-heap pond storage embankment will be constructed to a height of 100 feet on the top of the base platform (Figure 5). The in-heap storage embankment will create the in-heap storage pond. The total volume for solution storage behind the embankment is 14.5 million cubic feet. The total volume including solution storage and that occupied by ore is 55 million cubic feet.

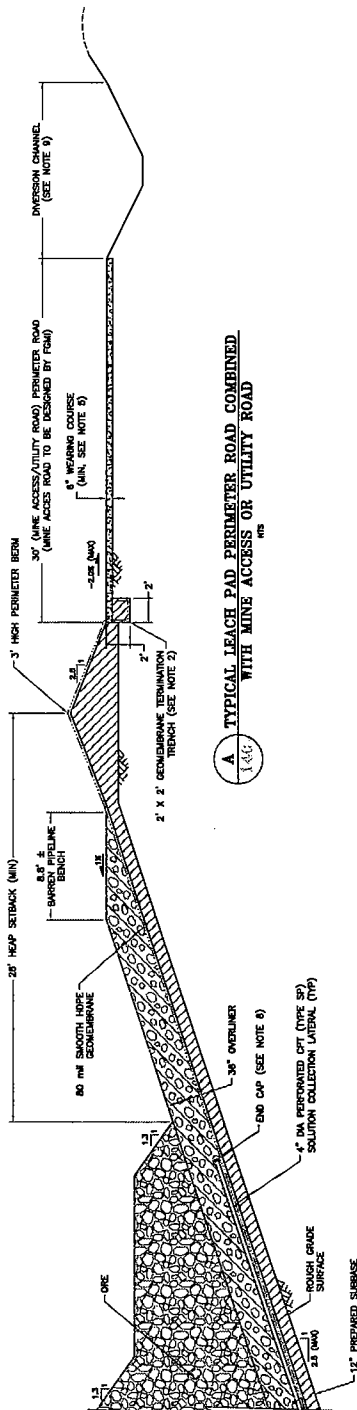
Two benches will be located on the downstream slope of the in-heap storage embankment including: (1) one 30-foot-wide bench to carry the rerouted existing pipeline and road across the Walter Creek valley, and (2) a 50-foot-wide bench to provide access along the top level of the base platform and area for installation of the collection and monitoring sumps for the underdrain system and Process Component Monitoring System.

The entire heap leach pad will be underlain by a prepared subbase and an 80-mil HDPE liner. For purpose of discussion, the pad is divided into two areas described as that area located outside the limits of the in-heap storage pond and that area beneath the in-heap storage pond. Outside of the in-heap storage pond the liner includes a geosynthetic liner with an underlying layer of a 1-foot-thick prepared subbase with a permeability of less than 1×10^{-5} cm/sec. Figure 6 provides details of the liner system outside of the in-heap storage.

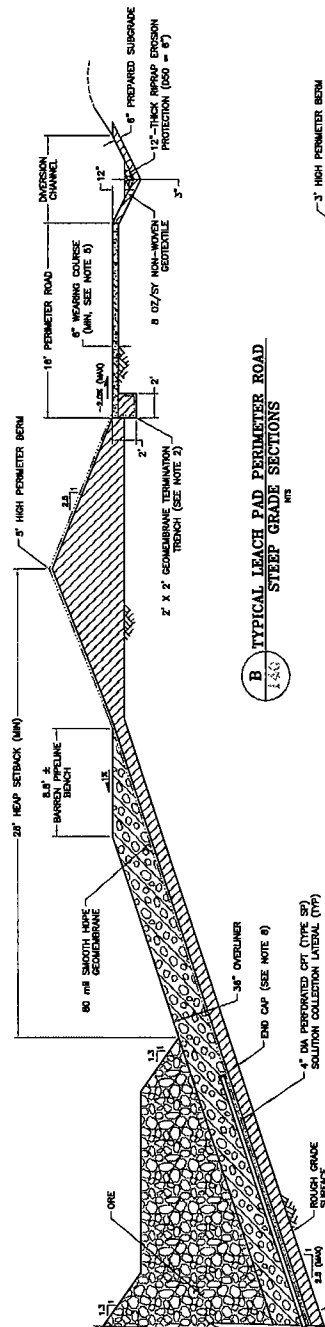
Beneath the in-heap storage pond, a double liner system forming a leachate collection recovery system (LCRS) will be used. Figure 7 provides sections and design for the liner system beneath the in-heap storage. The 1-foot-thick prepared subbase with a permeability of less than 1×10^{-5} cm/sec will be overlain by an 80-mil HDPE geomembrane. This will be overlain by an LCRS. The LCRS will include a second HDPE liner. On the side slopes of the in-heap pond, the LCRS will consist of a tri-planer geonet underlain and overlain by a non-woven geofabric sandwiched between the primary and secondary HDPE liners. On the floor of the in-heap pond, a 1-foot-thick clean sand layer with collection pipes will be used as a drain.

The floor of the in-heap storage pond will be sloped to drain to the LCRS sump. Any drainage captured by the LCRS will report to a sump at the upstream toe of the in-heap storage embankment where it will be returned to the in-heap storage pond. The collection and return of any collected solutions will be accomplished by pumping using a submersible pump located in a pipe between the primary and secondary geomembranes extending from the LCRS sump to the crest of the in-heap storage embankment.

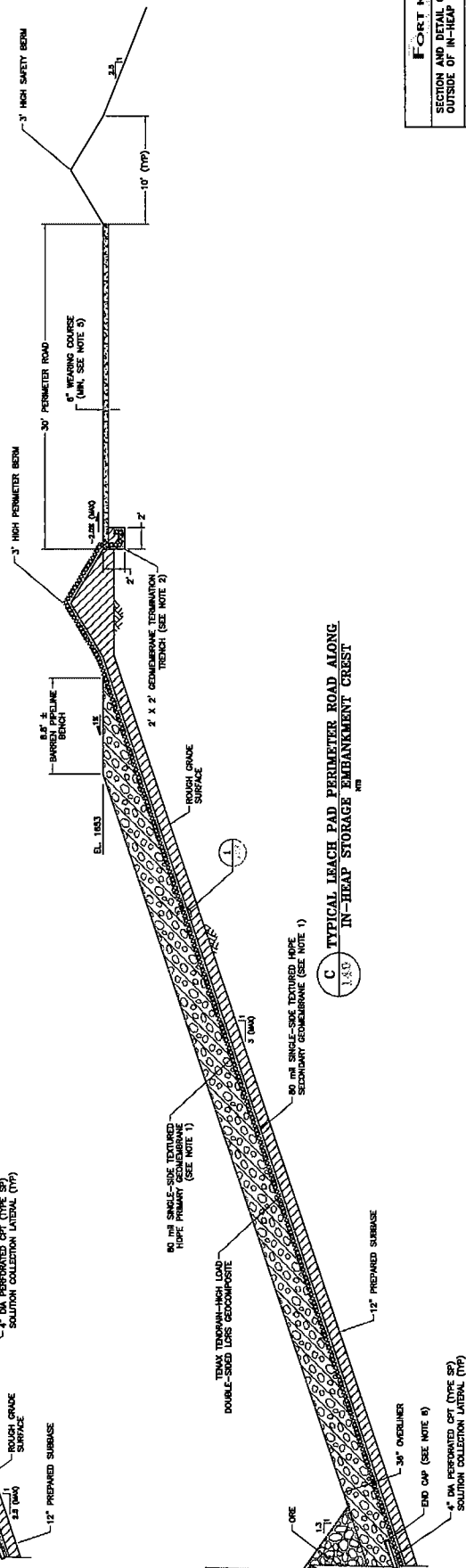
An overliner will be constructed over the entire leach pad. The overliner will consist of three feet of mill reject material crushed to predominantly less than one inch in size with a network of piping embedded. The drainage in the overliner will report to the in-heap storage pond and



A TYPICAL LEACH PAD PERIMETER ROAD COMBINED WITH MINE ACCESS OR UTILITY ROAD



B TYPICAL LEACH PAD PERIMETER ROAD STEEP GRADE SECTIONS

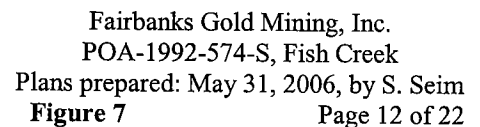


C TYPICAL LEACH PAD PERIMETER ROAD ALONG IN-HEAP STORAGE EMBANKMENT CREST

NOTES:

1. ALL SINGLE-SIDE TEXTURED HOPE LEACH PAD LINES SHALL BE PLACED WITH THE TEXTURED SIDE ADJACENT TO THE LOSS GEOMEMBRANE.
2. TERMINATION TRENCH SHOULD BE A COMPACTED SITE GRADING FILL MATERIAL FREE OF EXCESSIVE GRAVEL.
3. PERIODIC MAINTENANCE OF THE DIVERSION CHANNEL SHALL BE REQUIRED FOR THE LIFE OF THE FACILITY.
4. REFER TO THE TECHNICAL SPECIFICATIONS FOR MATERIAL PLACEMENT REQUIREMENTS.
5. THE MINE ACCESS/UTILITY PERIMETER ROAD SHALL BE GRADED TO THE MINIMUM GRADE AND FINISHED WITH A WEARING COURSE SURFACE. MINIMUM WEARING COURSE THICKNESS OF 6" SHALL BE MAINTAINED.
6. SEDIMENT CONTROL STRUCTURES SHALL BE CONSTRUCTED AS SPECIFIED BY TBM.
7. MAINTENANCE OF ALL FILL SLOPES WILL BE REQUIRED FOR THE LIFE OF THE FACILITY. SEDIMENT CONTROL STRUCTURES FOR THESE SLOPES SHALL BE PROVIDED BY TBM.
8. WHERE SOLUTION COLLECTION PIPE TERMINATES, IT SHALL BE FITTED WITH A MANUFACTURED SUPPLIED END CAP. OPERATIONAL MAINTENANCE OF THIS END CAP SHALL BE THE RESPONSIBILITY OF THE OPERATOR. THE END CAP SHALL BE DESIGNED FOR FUTURE 12-IN. IDENTIFICATION.
9. THE PERMANENT DIVERSION CHANNEL ASSOCIATED WITH THE MINE ACCESS ROAD REDUCTION SHALL BE DESIGNED BY TBM.

FORT KNOX			
SECTION AND DETAIL OF LINER DESIGN			
FIG. NO.	DATE	BY	FIGURE 6
A	12/2006	MM	
REV.			



solution collection wells located upstream of the in-heap embankment. The overliner will serve three purposes: (1) to minimize the head on the liner to reducing the risk of process solution leakage, (2) to protect the synthetic liner from damage during ore placement, and (3) to maximize the return of the gold containing pregnant solution for processing. Figures 6 and 7 illustrate the overliner.

The piping network embedded in the overliner will consist of a series of corrugated, slotted, smooth interior HDPE collection pipes. Although the overliner material has a significant fluid-carrying capacity, the piping will be included in the overliner to provide for more rapid transport of process solution to the in-heap storage pond and hence solution collection wells. The piping will include 6-inch to 24-inch collection pipes in the low areas of the recontoured basin leading to the solution collection wells. A series of 4-inch solution laterals will cover the areas between the collection pipes in a herringbone pattern to transport process fluid to the collection pipes. These will be spaced on varying intervals (20 to 130 feet) depending on the slope on which they are installed.

The process component monitoring system (PCMS) piping system is designed to monitor specific areas of the pad by extending each line of the PCMS system to the downstream toe of the embankment for monitoring. Slotted pipe extending up the basin slope will switch to an unslotted pipe at the edge of the in-heap storage pond. The unslotted pipe will extend to a monitoring sump at the toe to allow monitoring of each main collector pipe.

The PCMS consists of a lined, buried channel located beneath the prepared subbase under the main collection pipes in the overliner. The main collector pipes will carry process solution on nearly a full-time basis whereas the lateral collector pipes placed in the herringbone pattern will carry process solution generally on a part-time basis related to the time of active leaching in a specific area of the pad. Thus, the PCMS is located beneath the main collectors where the flow of process solution is the highest and the most consistent. Figure 8 illustrates the design of the PCMS.

A number of springs, seeps, and wet areas in the Walter Creek basin feed the stream flow that occurs in the leach pad footprint. A network of underdrains will be installed to collect the flows from the springs, seeps and wet areas and transport the flows to the base platform where the water will discharge to the tailing impoundment. The primary function of the underdrains is to remove seepage from beneath the lining system. Process solution is not anticipated to reach the underdrains and flows will be released to the tailing impoundment on a continuous basis unless indications of process solution are identified through monitoring. Figure 8 illustrates the design of the underdrains.

The pregnant solution will be pumped from the in-heap storage pond to a train of carbon columns where the gold and silver is absorbed on to carbon. Barren solution from the carbon columns will report to the barren tank where the cyanide concentration and solution pH will be adjusted prior to being pumped back to the pad. The CIC plant will be located at the east side of the existing mill building. After the gold is loaded onto the carbon in the CIC plant, the loaded carbon will be transferred to the existing Fort Knox refinery for further processing. The gold will be stripped from the carbon and recovered from solution by electro-winning. The stripped

carbon will be regenerated and cycled back to the CIC plant. Figure 9 illustrates the location of the CIC plant adjacent to the mill.

Pregnant solution will be removed from the heap and pumped to the CIC plant utilizing three pregnant solution collection wells located at the lowest portion of the in-heap storage basin. The solution collection wells will be vertical turbine pumps placed in 30-inch-diameter thick wall, slotted steel casing extending from the liner at the upstream toe of the in-heap storage embankment to a bench on the face of the heap leach pad. The pumping rate will approximate the solution application rate of 8,000 gpm. There will be three wells, and each will have a 250 hp pump. Each of the wells will have a capacity to pump 4,000 gpm. Two pumps will be operated at a time and the third will be on standby.

Barren solution will be returned to the pad by pumping using 500 hp pumps. Barren solution will be pumped to the pad at a pumping rate of approximately 8,000 gpm. Barren solution will be applied on the heap leach ore at a rate 0.005 gallons/square foot. Solution will likely be applied using drip emitters but sprinklers may be used under some circumstances. The total area being leached at any one point in time will be approximately 1,600,000 square feet.

Barren solution and pregnant solution will be pumped in double wall pipes between the pad and the CIC plant. Reagents in the solution will include sodium cyanide, caustic, lime and antiscalant. The pH of the solution will be maintained at approximately 10.5 to 11.0. Barren solution will contain 100 to 200 ppm of WAD CN, and pregnant solution will have a WAD CN concentration of 30 to 50 ppm.

Storm water will typically be managed by reducing the flow of barren solution to the pad. The in-heap pond has not been designed to allow for long-term storage of precipitation. Pregnant solution will be pumped directly to the process plant. The normal operational level of pregnant solution in the in-heap storage pond is anticipated to be that required for operation of the pumps. In the event of an extended power outage, emergency back-up generators will be available to supply 500 hp to operate the solution collection wells and maintain fluid levels within the in-heap storage reservoir.

The in-heap storage pond will be sized to contain: (1) solution from a 24-hour draindown, (2) the runoff from the 100-year/24-hour storm event, and provide five feet of freeboard in accordance with the Alaska dam safety requirements. Table 1 summarizes the storage volumes for the in-heap storage reservoir.

Ore for the heap leach will be mined by the conventional truck and shovel mining method currently used at Fort Knox from the Fort Knox Pit. At this time, no changes in mining methods are anticipated. Current mine plans are for mining to be completed in 2010. Heap leaching increases the number of ounces to be produced from the pit by lowering the grade of the ore that can be processed. Currently, the cutoff grade for high grade ore to the mill is 0.0178 ounces per ton. For heap leach, the cutoff grade is currently 0.0068 opt. The cutoff grade and subsequently the tons mined and processed are continually revised based upon the economics of mining and processing. The Fort Knox Pit may ultimately increase in size, at least in part, due to heap leaching as mine plans are revised to reflect changes in cost.

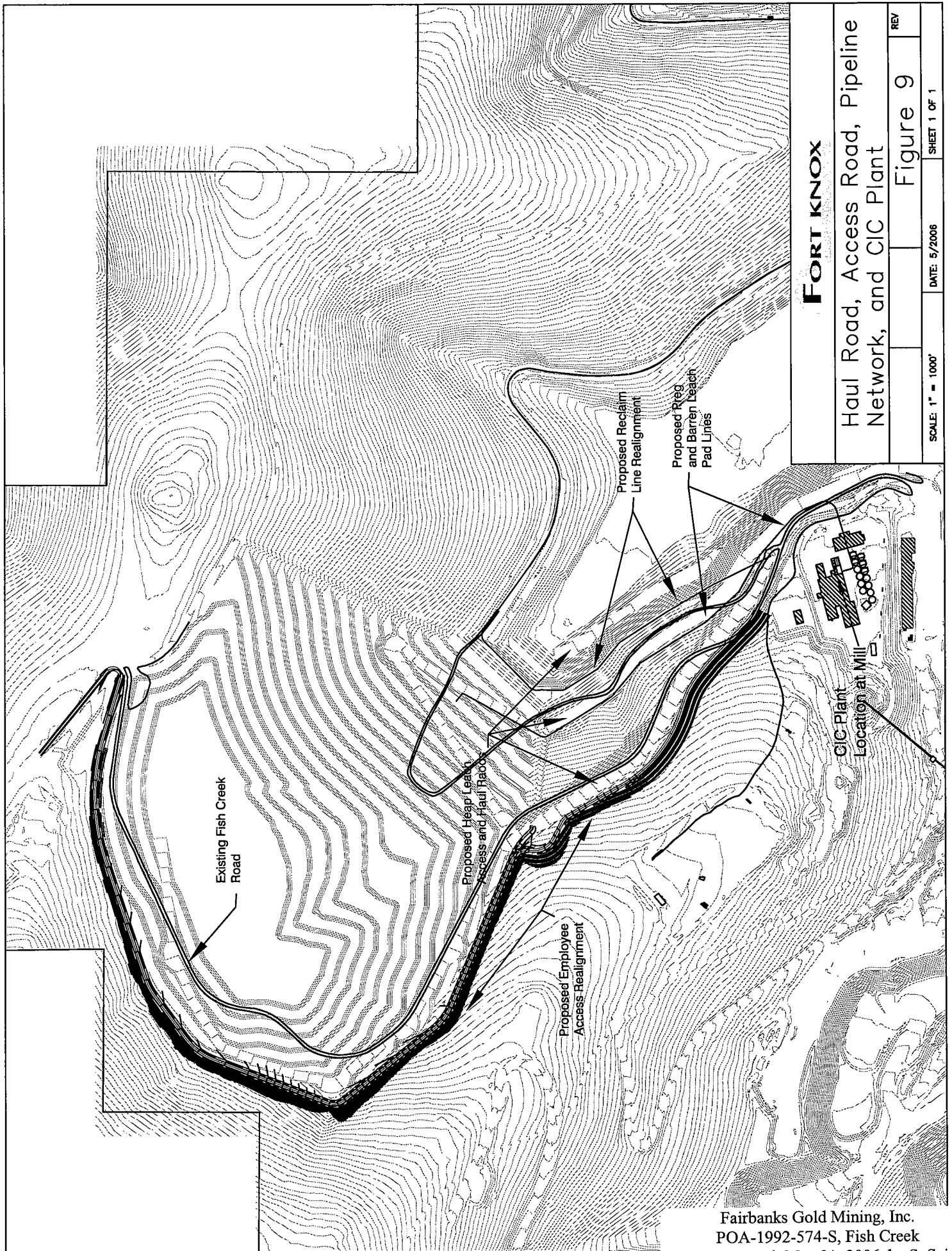


Table 1 Summary of In-Heap Storage Volumes

	Gallons (Millions)	Cubic Feet (Millions)	Vertical Feet
Freeboard	9.5	1.27	5
24 Hour Draindown	11.5	1.54	6
24 Hour/100 year Storm Event	30.2	4.04	17
Operational Flexibility	31.4	4.19	22
Operations	27.4	3.66	50
Total	110	14.70	100

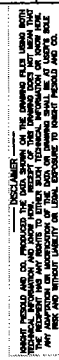
Loading ore on the heap leach pad will commence in late summer or fall of 2007. Year-round loading and leaching is planned. Ore will be hauled to the pad at a rate of 40,000 tons per day, 365 days per year. Ore will be hauled directly from the pit when available or from existing stockpiles. A haul road that will be constructed from the area of active pit operations to the heap leach pad for haulage of ore (Figure 9). Much of the haul road is located on Mental Health Trust Land Office (MHTLO) land.











Initially, a lift approximately 100 feet thick will be placed behind the in-heap storage pond to initiate leaching. For subsequent lifts, ore will be placed in 40-foot lifts while maintaining an overall slope of 3H:1V. Figure 10 illustrates the ultimate pad configuration.

FGMI is not planning any increase in the equipment fleet as a result of the heap leach becoming operational. One dozer will be dedicated to the heap leach pad for pushing ore and ripping. Ore will be loaded and hauled with the existing truck and shovel fleet. In addition to the currently planned workforce for the mine and the mill, an additional 12 people will be employed for operation of the heap leach pad.

Surface water diversion around Stage 1 and 2 of the leach pad will be accomplished by a temporary diversion channel cut into the basin slope. The diversion channels will be designed to pass runoff from the 100-year/24-hour storm event. The channels will be extended to discharge into downslope diversion channels located east of the pad on the north and south sides of the valley. The diversion channels will be designed with a 0.5 percent grade sloping downhill to the eastern perimeter of the pad and then continuing to downslope channels that will discharge into the tailing impoundment.

Construction of the heap leach pad will require realignment of the Fort Knox Mine access road. Figure 9 depicts the location of the realigned mine access road on the perimeter of the heap leach pad.



	EXISTING GROUND SURFACE CONTOUR AND E.L. FEET
	REARERD GROUND SURFACE CONTOUR AND E.L. FEET
	HEAP-LIFT CROSS/TO CONTOUR AND E.L. FEET
	PROPERTY BOUNDARY
	EXISTING PIPELINE
	EXISTING DRAINAGE/INVERSION
	EXISTING POWER LINE
	EXISTING ROAD
	EXISTING CULVERT
	TAILING (CONFERENCED AS OF 4/30/2005)

1. THE EXISTING POWER LINE SHALL BE RELOCATED IF REQUIRED BY FCM.

FORT KNOX

SIZE	FORM NO.	DWG NO.	REV
		FIGURE 10	
SCALE		DW101-89-08-180	

A horizontal scale bar labeled "PLAN" at the top. The bar has tick marks at 0, 300, and 600 FEET.

NOTE: CDR4P4C MAPPING PROVIDED BY CLIENT DATA FILE
OF PORT: \\NOVA\2003_LOCAL.DWG. DATED: 07/08/06
BY: JOURNAL PREPROD ON 7/2008. SEE
\\NOVA\2003\DATA\Info\Default\Info\071505

RECLAMATION AND CLOSURE

The method of closure for the Ft. Knox heap leach pad is based on site-specific conditions, facility design, and currently available test work. Key aspects of the site and operation that have been considered in developing the closure plan include the following:

- The climate at the site is characterized by moderate precipitation, moderate evaporation, and cold temperatures. As a result, the long-term drainage from the pad after closure is predicted to be minimal.
- Laboratory test work shows that cyanide concentrations will decrease rapidly through recirculation with freshwater if reagents are not added to maintain process-level concentrations.
- The tailing impoundment is located directly downgradient from the proposed heap leach pad and will be an integral part of the long-term solution management scheme.
- To facilitate closure management, a portion of the solution inventory can be directed to the pit or treated once residual leaching is no longer economic. Long-term seepage will be routed to the surface of the tailing impoundment.
- The facility will be re-graded to an overall 3H:1V slope and covered with growth media. The re-grading design will include erosion control measures as necessary to avoid loss of growth media.
- Due to the presence of the tailing directly downgradient of the heap leach facility, no suitable locations for groundwater monitoring wells exist. The presence of tailing likely has interfered with local water quality that would limit the effectiveness of monitoring wells in detecting potential seepage. Therefore, monitoring will occur in the PCMS and underdrain systems during operation and closure of the pad.

A water balance model was developed to project draindown conditions for the ultimate heap configuration. The initial discharge of 8,000 gpm is assumed and is based on an active leaching area of approximately 1,600,000 ft² and an application rate of 0.005 gpm/ft². The model incorporates residual draindown from the other portions of the facility that will have been leached prior to the time of closure.

After 90 days of draindown, the discharge rate is predicted to decrease to approximately 170 gpm. After one year, the discharge is predicted to decrease to approximately 3 gpm. Climatic conditions have only a small influence on discharge rate fluctuations over the initial draindown period. Given the magnitude of the draindown flow rate and the minor infiltration, significant variations in flow due to snowmelt or rainfall are not predicted during the first 3 to 5 months. As discharge rates continue to decline through time, the infiltration on the margins of the pad (where ore thickness is less) begins to influence variations in flow.

The long-term drainage from the ultimate heap leach pad is largely a function of infiltration of melting snow and direct precipitation. The snow melt period occurs over a one month period beginning in April or May. Long-term draindown rates are projected to stabilize between 2 and 7 gpm depending on seasonal variations. During wet years the maximum flow rate may increase to 10 gpm during the spring melt period. The duration of the peak flows during the year is generally on the order of 10 to 12 days. The maximum flow rates resulting from the 100 year, 24-hr storm (3.5 inches) range from 10 to 15 gpm depending on the antecedent moisture conditions.

After economic leaching has been completed, solution will continue to be re-circulated on the pad to promote cyanide destruction. No cyanide will be added to the solution during this time. Freshwater will be added to the system as required to facilitate rinsing and removal of metals. During the rinsing, it may be necessary to direct solution to the pit or to a treatment facility in order to manage the water balance and remove chemical mass from the system. The duration of this step will be controlled by the time required for the water quality to achieve compliance standards.

The heap leach water will be released to the tailing impoundment when the quality meets the criteria for discharge to the tailing. The heap leach embankment is designed with a drainage system that will upon opening allow the heap leach to free drain with the drainage routed to the tailing impoundment. The system will prevent significant amounts of water from accumulating in the heap leach facility following closure.

Once the water quality is suitable for release, the heap will be re-graded to an overall 3H:1V slope. Approximately 12 inches of soil cover will be placed on the regraded surface. The soil material will be sourced from stockpiles created during foundation preparation. Following growth media placement, the heap leach pad will be ripped on the contour to create a seedbed and to provide erosion control. Fertilization will be based on soil tests. The heap leach pad will be revegetated with a grass seed mix with the initial objective to minimize soil erosion.

Seeding and fertilizing will be accomplished using broadcast methods that may include hand, dozer or off-road vehicle mounted broadcasting and aerial broadcast application. The application rate for broadcast seeding using the presently proposed grass seed mix will be 11-18 pounds of pure live seed per acre. Fertilizer will be applied at a rate of 100 to 300 pounds per acre.

MONITORING

Monitoring of the heap leach during operation will include the barren solution, pregnant solution, LCRS, PCMS and the underdrain system due to their potential for detecting process fluids in the event of leakage. Table 2 summarizes the monitoring of the heap leach pad during operations and closure.

Long-term monitoring will occur downgradient of the facility at the surface water and groundwater monitoring points established as part of the Fort Knox closure plan. Figure 11 illustrates the location of the long-term groundwater and surface water monitoring locations.

Table 2: Summary of Monitoring

Source	Parameter	Frequency
LCRS	Flow	Weekly
PCMS	Flow/WAD CN/pH	Weekly/Monthly*
Underdrain	Profile II	Quarterly
Barren Solution	Profile II	Quarterly
Preg Solution	Profile II	Quarterly
In-Heap Storage Pond	Elevation	Continuous Automatic Monitoring
Rinsing Solution	Profile II	Quarterly**
Closure Drainage Pipes	Profile II	Quarterly***

* Flow will be measured weekly, samples will be taken monthly if there is flow.

** Begins after economic leaching is completed.

***Drainage pipes to be installed at closure, after two years with no issue sampling is annual.

